

Greening the Supply Chain: A Model for Mentoring

Presented by

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Greening the Supply Chain.... A Model for Mentoring

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Greening of the Supply Chain

Strategic Goals Program

- ✱ Voluntary program for Metal Finishers
- ✱ Cooperative effort
- ✱ EPA
- ✱ AESF, NAMF, MFSA
- ✱ States
- ✱ Locals-POTW'S
- ✱ NGO'S

Program Goals

GOALS

- ★ 90% reduction organic TRI emissions
- ★ 50% reduction in TRI metals emissions to air & water
- ★ 98% metals utilization
- ★ 50% reduction in water use
- ★ 25% reduction in energy use
- ★ 50% reduction in hazardous sludge to landfill
- ★ Reduction in human exposure to toxic materials
 - Employees and community
 - P2, Material substitution, contingency planning
- ★ Benchmarking data
 - Normalized sludge, water, emissions, and energy

SGP Process

- ✱ Sites select the baseline year
- ✱ Begin metrics collection
- ✱ Submit annual updates to EPA on progress toward numerical goals
- ✱ Supplier awareness of metrics brings about positive progress and renewed
- ✱ EPA can assist with data analysis / collection

Corporate Sponsorship Evolution

- ✴ SGP was originally focused directly on metal finishers
 - ✴ Measure progress in waste reduction
- ✴ EPA Region I – Linda Darveau
 - ✴ Conceived the idea of a “corporate sponsorship”
- ✴ This sponsor would interact directly with their supply chain metal finishers
- ✴ Business relationship helps focus attention
 - ✴ No offense EPA!
 - ✴ EPA, metal finisher, corporate sponsor
- ✴ Raytheon became sponsor 8/01
- ✴ Pratt & Whitney became sponsor 4/02

EPA Award Ceremony - May 2002 - Boston

In recognition of efforts
"to implement the
company's first strategic
goals corporate
sponsorship program
and move Raytheon
toward the goal of
product stewardship and
responsibility for the
environment" with the
metal finishing industry.



EPA Region I Outreach Successes

- ✱ Corporate sponsorship concept
- ✱ Summer intern use for SGP recordkeeping
 - Training records, metrics, compliance calendar, EMS etc.
- ✱ Working closely with metal finishers
 - Investing the time in the field
 - Getting to know the customer
- ✱ Partnering with OTA
 - MA organization that offers free technical assistance

Philosophy of Raytheon Approach

- ✱ Environmental, health and safety are united today in industry
- ✱ Holistic risk evaluation of a facility
- ✱ Assess the real risk to human health and the environment
- ✱ Asset protection
 - People, buildings, product, interdependency
- ✱ Safety
 - Electrical safety, GFCI's, PPE, cyanide, Cr+6, Pb etc
- ✱ Must consider EHS, not just "E"

Why Help Suppliers?

- ✱ It's the right thing to do
 - ✱ We have a shared EHS responsibility
- ✱ Protects employees, community and the environment
- ✱ Improves product quality
- ✱ Improves supplier productivity
- ✱ Ultimately lowers costs

**Raytheon wants to align with
suppliers that have similar
EHS stewardship beliefs
and programs**

Shared EHS Responsibility

EHS performance is a barometer of business performance

Good EHS is good business

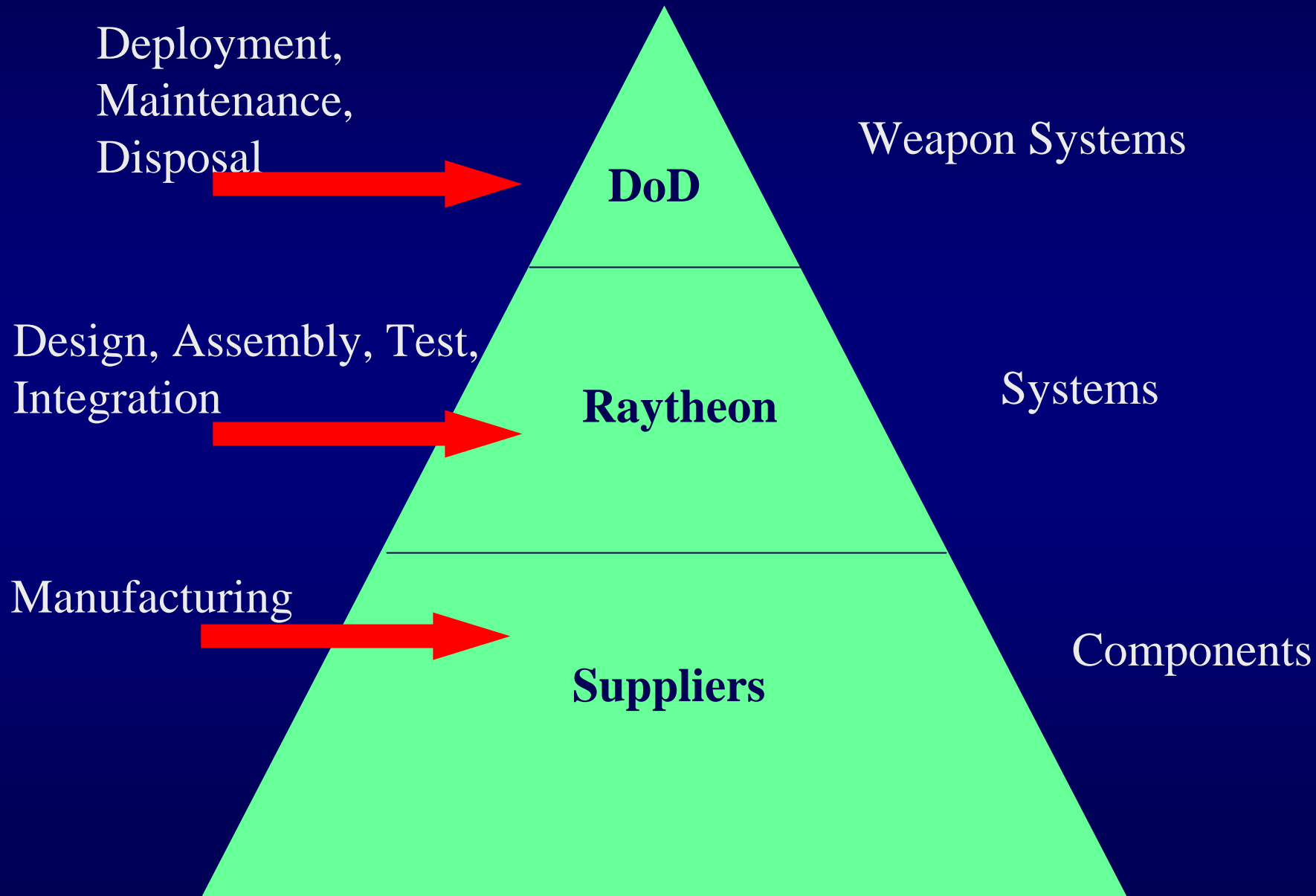
How Has Raytheon Changed?

- ✴ Major acquisitions in the 1990's
 - ✴ E-Systems
 - ✴ TI Defense
 - ✴ Hughes Aircraft Company
- ✴ Divestiture of the appliance businesses – Amana etc.
- ✴ Focus on “Centers of Excellence”
 - ✴ Consolidation of like operations- plating, machining, metal finishing
- ✴ Focus on core competencies
- ✴ Outsourcing of PWB manufacture, metal finishing etc.
- ✴ SUPPLIERS PLAY A KEY ROLE!

Why SGP Makes Sense

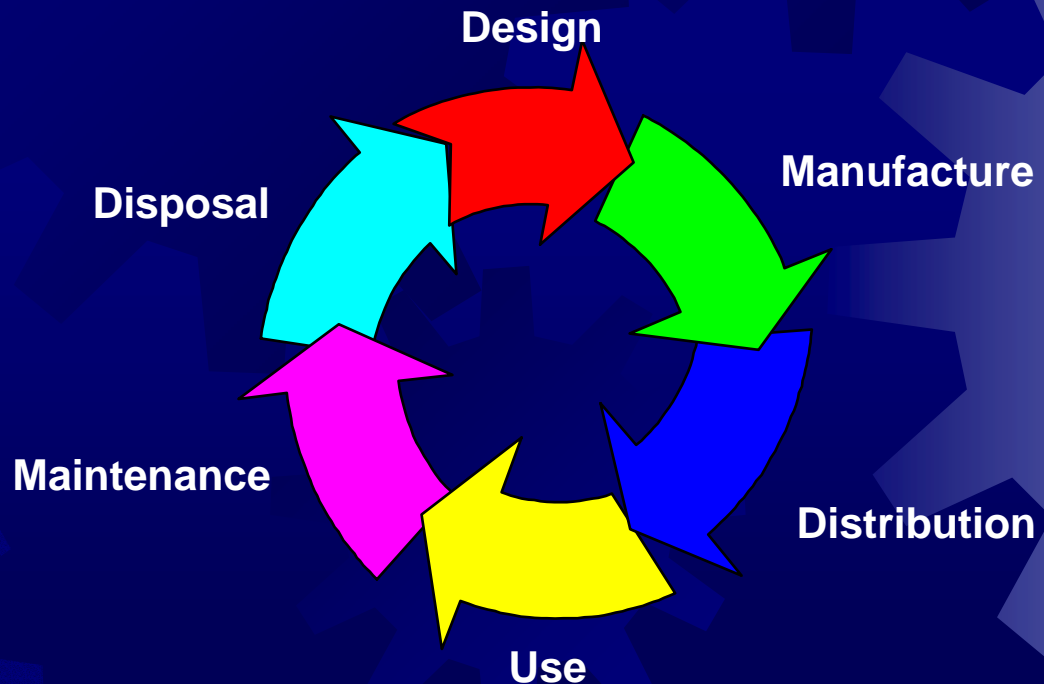
- ★ Many wet metal finishing operations are now outsourced to small and medium sized suppliers
- ★ The EHS burden has been “shifted” to our supplier base
 - EHS stewardship is now outsourced

The Big Picture



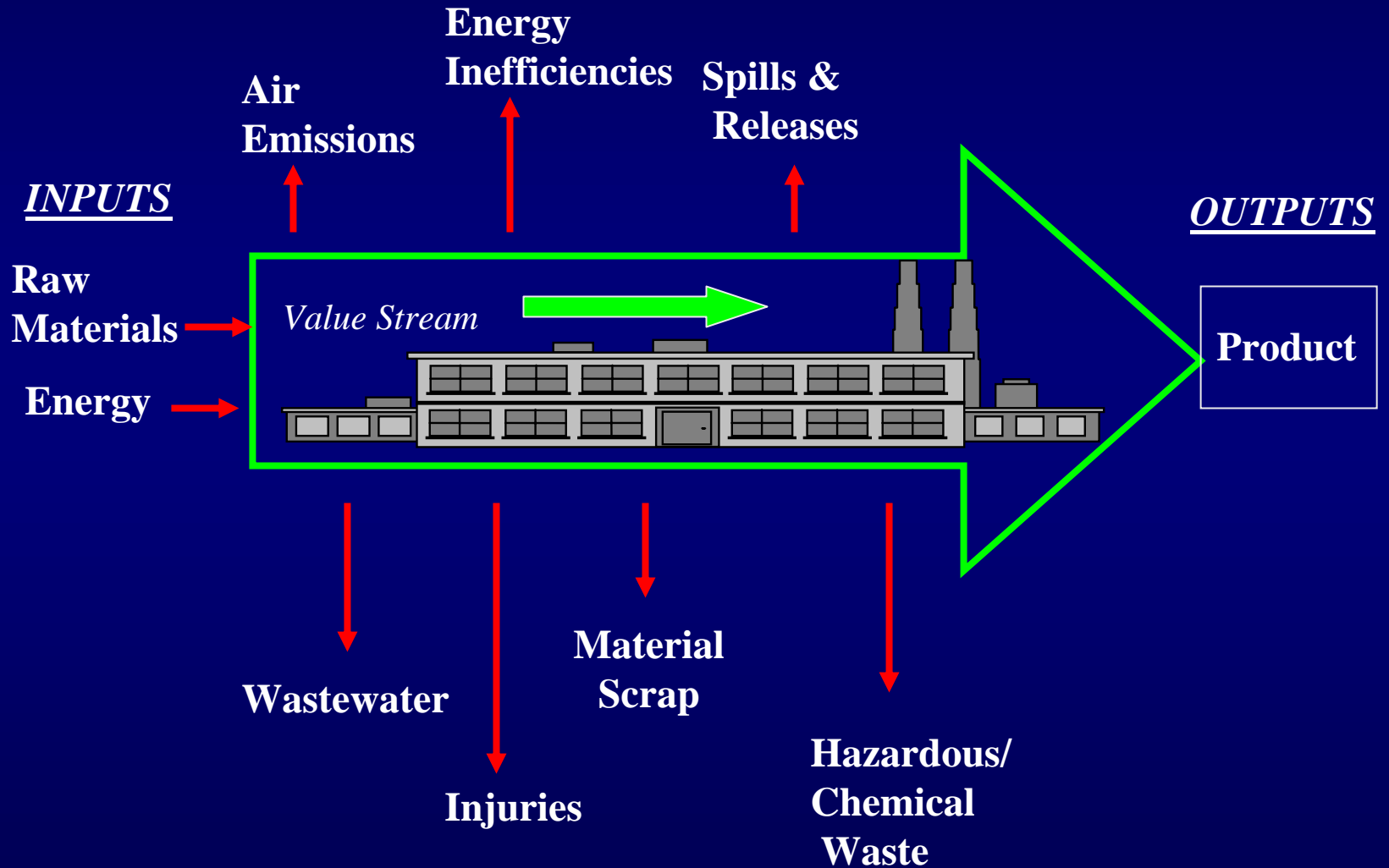
Product Stewardship

- ✱ We have an obligation to consider all aspects of our product life-cycle
- ✱ Suppliers are one piece of “manufacturing”
- ✱ We all must take a more holistic view



Value Stream

Defects / Inefficiencies



How Best to Help Suppliers?

- ✱ Share lessons learned
 - ✱ Fires, injuries, spills etc.
- ✱ Share best practices
 - ✱ P2, material substitutions etc.
- ✱ Bring resources to the table
- ✱ Share training and communication tools

Listen to the Voice of the Customer

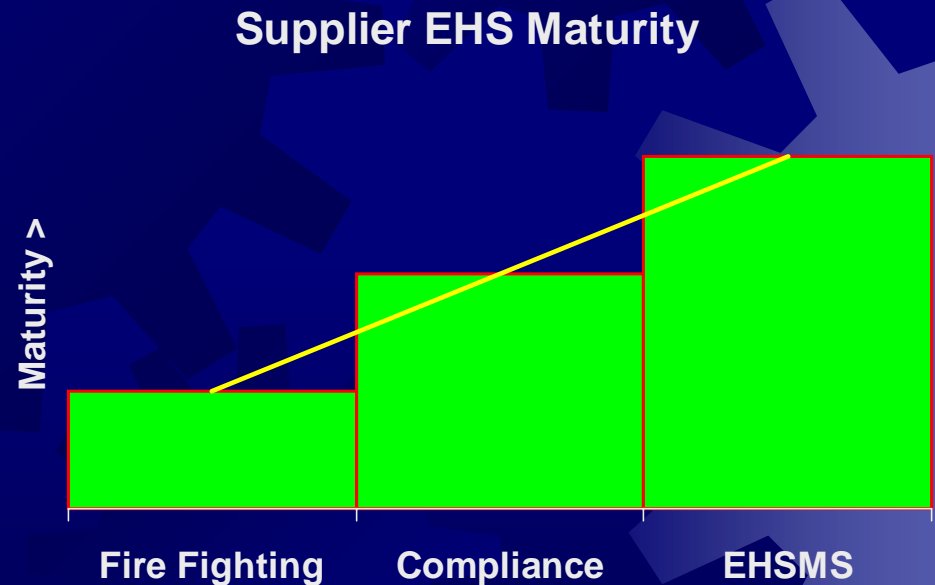
Challenges

- ✱ Figure out a methodology for a large company to mentor a small company with their EHS requirements
- ✱ Legal department may have concerns
 - Liability
 - How best to “assist”?
- ✱ How to best assess the supplier’s EHS program?
 - Questionnaire
 - Site visit – quality and/or EHS
 - 3rd party evaluations (database reports)
- ✱ What types of assistance programs will work?
- ✱ Talk to the “customer” to get their input

Mentoring is a win / win

Challenges

- ✱ Small suppliers have limited resources
- ✱ EHS compliance needs are a challenge for some suppliers
- ✱ Level of EHS maturity varies among suppliers
- ✱ Some are struggling with basic compliance
- ✱ Others are ready for EMS



Supplier Benefits

- ✱ SGP metrics helped many suppliers see these costs for the first time
- ✱ These are real costs of doing business
- ✱ Armed with this info, they can now manage what they measure
- ✱ This is a win/win for the supplier, their employees and community, the environment, and the OEM.

Methodologies

- ★ Host quarterly meetings and bring resources to the table
 - State compliance assistance resources (OTA – MA)
 - EPA ombudsman presentation on new regulatory requirements
- ★ Share best practices / lessons learned
 - Heated plastic tanks (fire risk)
 - EHS audit protocols (RCRA)
 - Pollution prevention success stories, less toxic materials etc.
 - General environmental exposures presentation, bonding & grounding
- ★ Arrange for 3rd party hazardous waste training session
- ★ Identify technical assistance programs that are available
 - Free of charge / no regulatory enforcement link
- ★ EHS website – resource sharing
- ★ EHS Video Library sharing
- ★ Leverage central chemical management services
 - Lower virgin chemical costs
 - Reduce on-site chemical inventories

Total Chemical Management Services

- ★ One major supplier that manages:
 - ★ Chemical procurement and warehousing
 - ★ Compressed gas procurement
 - ★ Hazardous waste disposal
- ★ Supply “hubs” are established at key locations
- ★ Allows industry to focus on core competencies
- ★ Provides comprehensive electronic database of usage
 - ★ Regulatory reporting
- ★ Innovative cost sharing model
 - ★ Properly incentivized

Advantages

- ✴ Lower chemical costs
- ✴ On-line MSDS's - 24/7
- ✴ "Free" environmental report data
 - ✴ Web-based 24/7
 - ✴ TRI threshold determinations
 - ✴ MA TURA listing (Form S's)
- ✴ Just-in-Time (JIT) chemical delivery
 - ✴ Space efficient - outsourced chem. warehousing
 - ✴ Fewer shelf life issues (labpack)
- ✴ Incoming inspection of chemicals
- ✴ Pollution prevention initiatives
 - ✴ Incentive to lower chemical usage

Hard Savings vs. Soft Savings

Hard Savings

- ✱ Savings on cost of chemicals
- ✱ Savings on infrastructure costs
- ✱ Lower chemical usage
- ✱ Chemical substitutions that lead to longer “tool” life
- ✱ Inventory carrying cost

Soft Savings

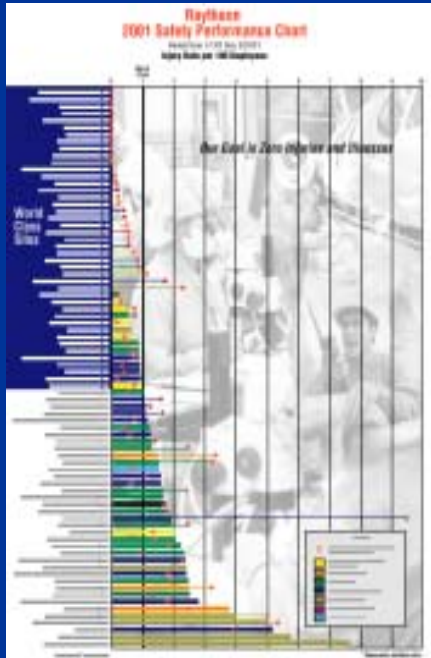
- ✱ Reduced liability
- ✱ MSDS accessibility
- ✱ Reduced EHS reporting times
- ✱ Reduced ordering times
- ✱ Less purchase orders generated
- ✱ On-line chemical catalogs
- ✱ On-line specifications
- ✱ Less contracts to manage
- ✱ “One stop shopping”

Other SGP Ideas

- ★ Health & Safety Issues
 - PPE, ventilation systems, forklift safety etc.
- ★ Electrical safety training / booklets
 - LOTO, GFCI, general electrical safety
- ★ Asset Protection Issues
 - Heated plastic tanks, bonding/grounding, sprinkler system maintenance, specialized detection / suppression equipment
- ★ Environmental Risks
 - Bulk chemical receiving / loading
 - Sumps, pits and containment areas
- ★ Communication vehicle sharing- pamphlets etc.
- ★ Creation of a shared website containing useful EHS information

The Sky is the Limit!

Communications



How Do We Integrate into Supply Chain Management (SCM)?

- ✦ Creating a sustainable process.....
- ✦ Integrate EHS into quality audits
 - Quality team cross-training or EHS presence
- ✦ EHS basic questionnaire for suppliers
- ✦ Evaluation of supplier's EHS programs
- ✦ Goal is to build EHS into the process as a true discriminator

Integrate EHS into the SCM process

What Do We Ask?

- ✱ Do you have a FTE EHS person?
- ✱ Describe your EHS compliance programs
- ✱ NON, NOV history - state / federal
- ✱ HW generator status
- ✱ Wastewater discharge method(s)
- ✱ Soil / GW contamination on-site?
- ✱ OSHA recordable injury rate?
- ✱ Are you aware of the EPA SGP Program?

How Does EPA SGP Work for Us?

- ✱ Raytheon takes its EHS stewardship seriously
- ✱ We are willing to share our EHS lessons learned with our suppliers and peers
 - Greening of the supply chain
 - CFC labeling example
- ✱ Sharing of tools and best practices
 - What works, what doesn't
- ✱ Information shared is knowledge
 - Conference presentations
 - SGP meetings - best practice sharing
 - Subject Matter Expert presentations - tool sharing
- ✱ Raytheon wants to provide the platform for innovative thinking in how we can all improve our EHS performance
- ✱ Raytheon hopes to catalyze EHS excellence!



TEAMWORK

NEVER DOUBT THAT A SMALL GROUP OF THOUGHTFUL,
COMMITTED PEOPLE CAN CHANGE THE WORLD.
INDEED, IT IS THE ONLY THING THAT EVER HAS.

Greening the Supply Chain

Ed Waldner

Deputy Commodity Manager - Special Processes
Green Supplier Team



National Compliance Assistance Providers Forum 2002
Optimizing Resources for Environmental Results
4 December 2002

Today's Topics

- Why Green the Supply Chain?
- P&W's Objectives in Greening the Supply Chain
- Supplier Initiatives / What is appropriate
- Potential Downsides/Challenges of working to Green the supply chain

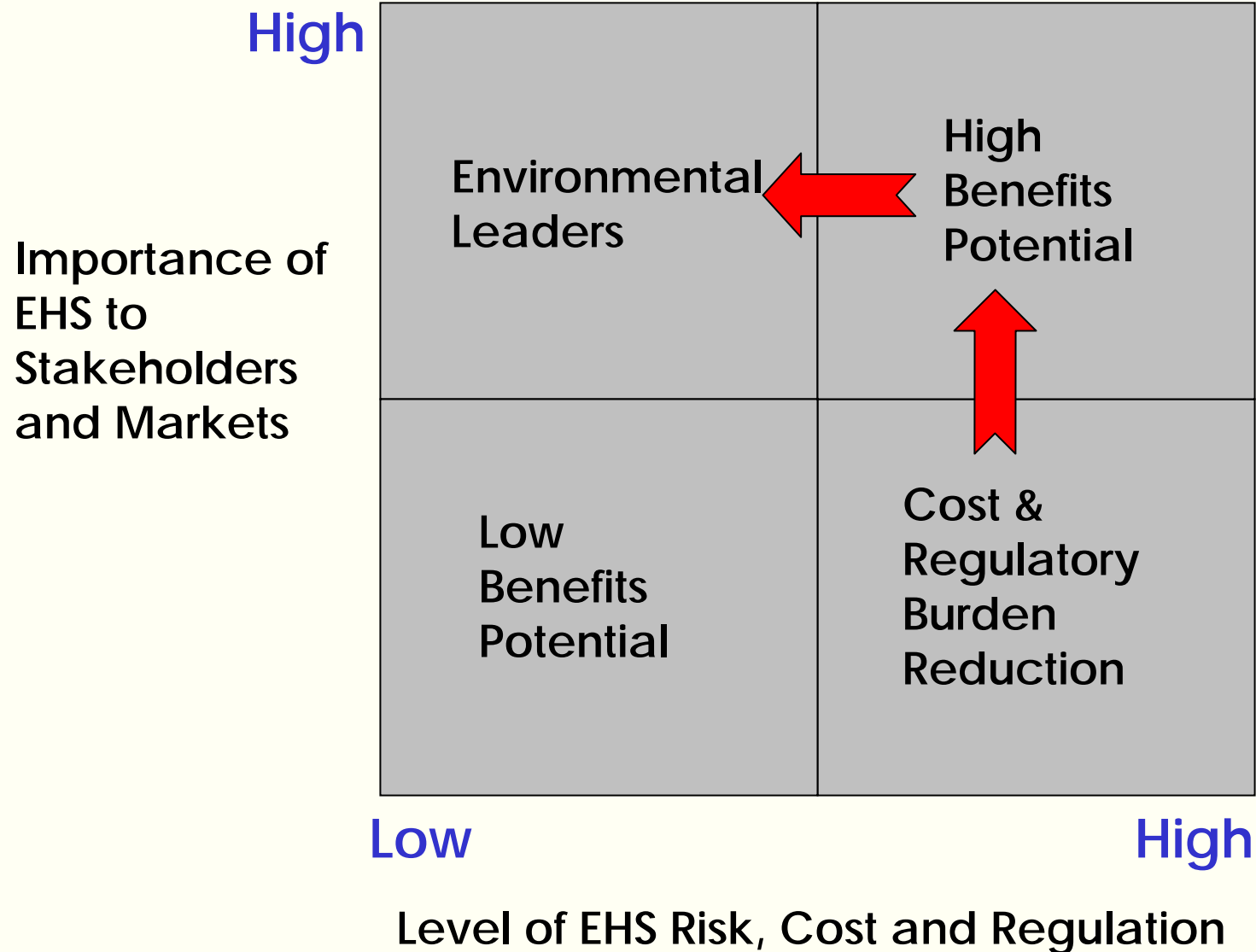


Why is Greening the Supply Chain Important to Us?

- UTC EH&S Policy Statement
- Growing pressure from:
 - customers
 - regulators
 - advocacy groups
 - shareholders
 - investors
- Expanding definitions of liability and risks
- Green Engine Program designed to take life cycle approach
- Supplier rationalization and strategic sourcing
- 70-80% of our parts are made by suppliers
- Good EH&S practices **drive down costs** and help prevent **business interruptions**
- Waste = \$\$\$\$\$
- To understand the impact of our products through their life cycle we must understand our suppliers better.



Business Drives Shifting Over Time

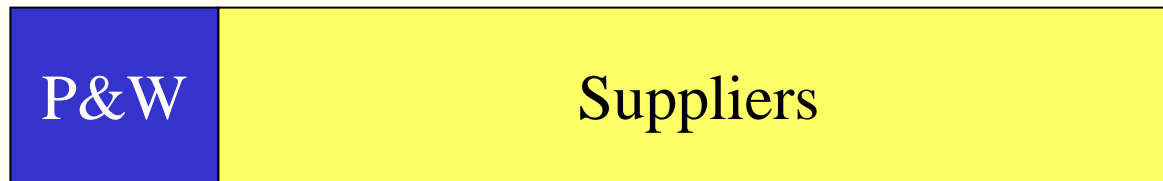


EH&S risks have shifted off-site and beyond direct control

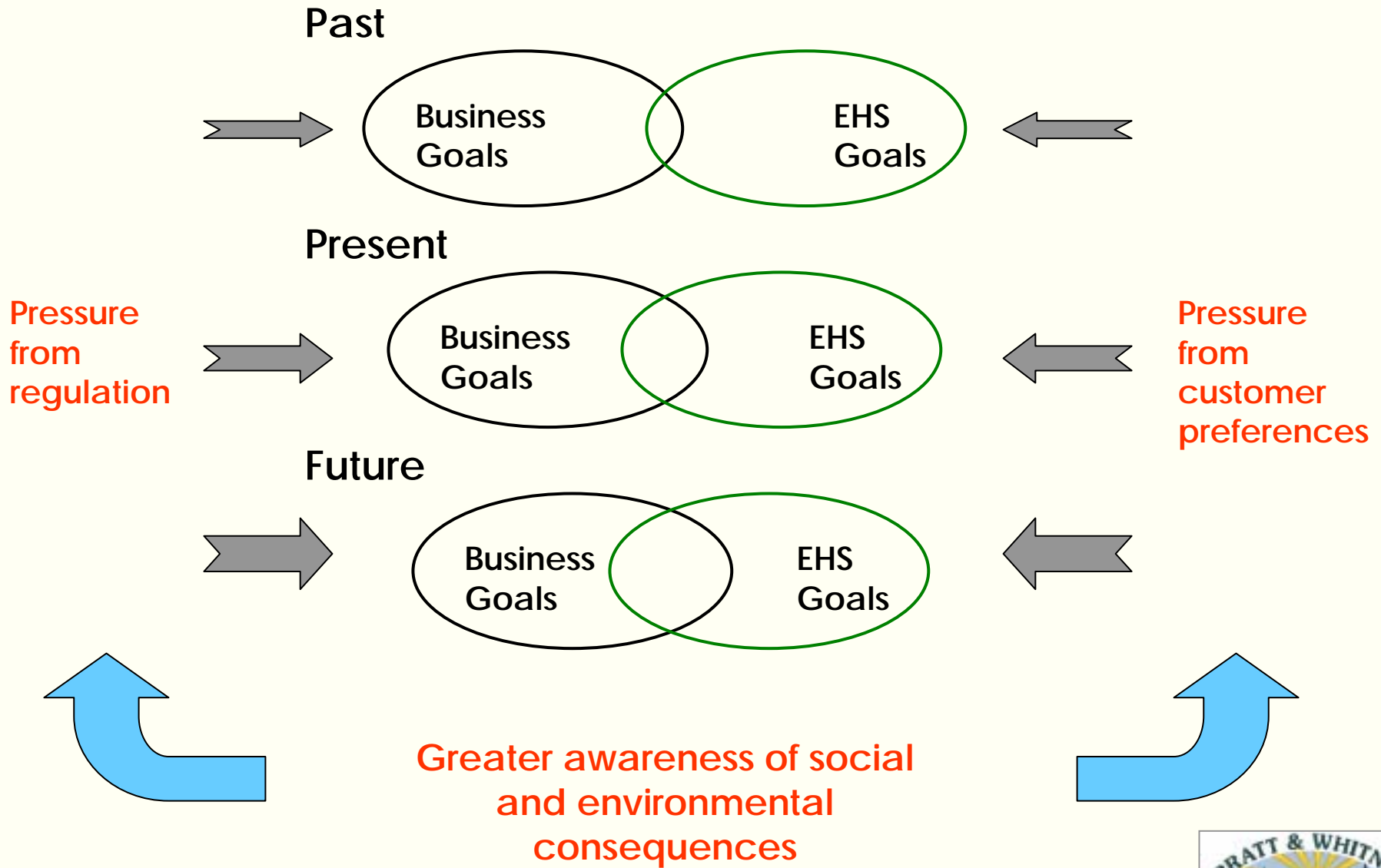
Pre-1990s: Manufacturing works with EH&S on
large risks/ opportunities



Today: Procurement works with Green Engine
Program on large risks and opportunities

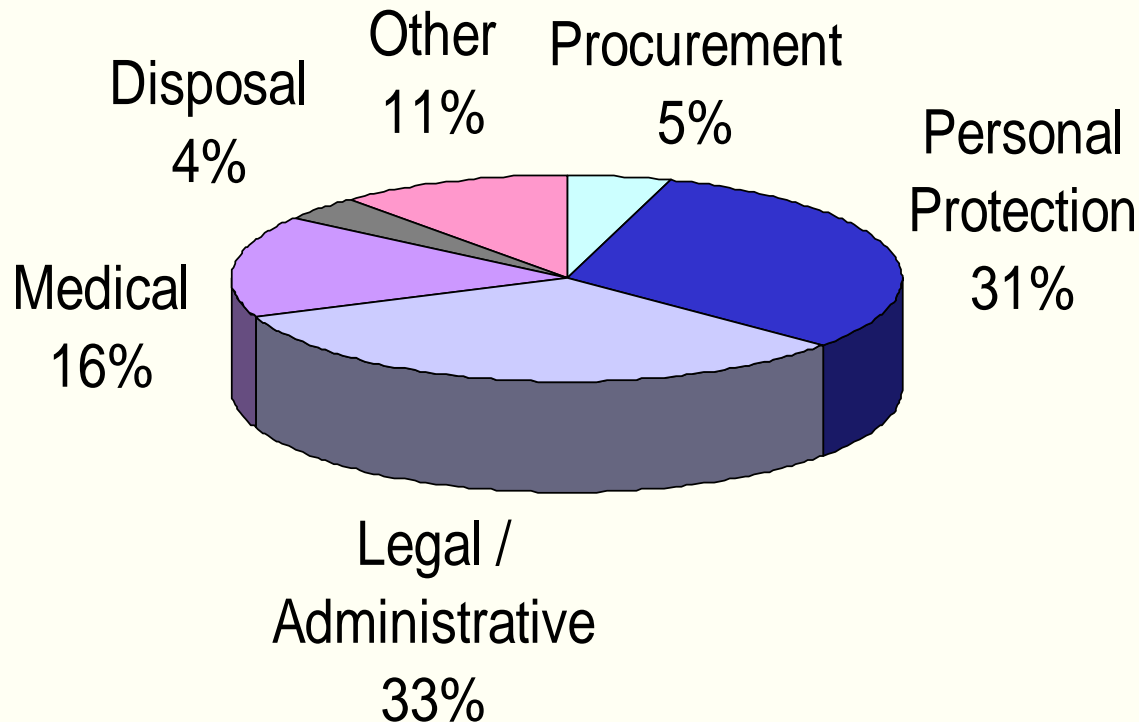


Increasing Convergence of Business and EHS Goals



\$1 to Purchase and \$19 to Manage

Life Cycle Impact Of Hazardous Materials Content



Objectives

- Encourage suppliers to develop sound environmental management systems
- Facilitate the sharing of best practices
- Work with suppliers to get superior green technologies implemented
- Transfer Pollution Prevention Technologies



Elements of a Green Engine

Vision: Pratt & Whitney Sets the Standard for Green

Has the lowest possible
Emission Impact during use

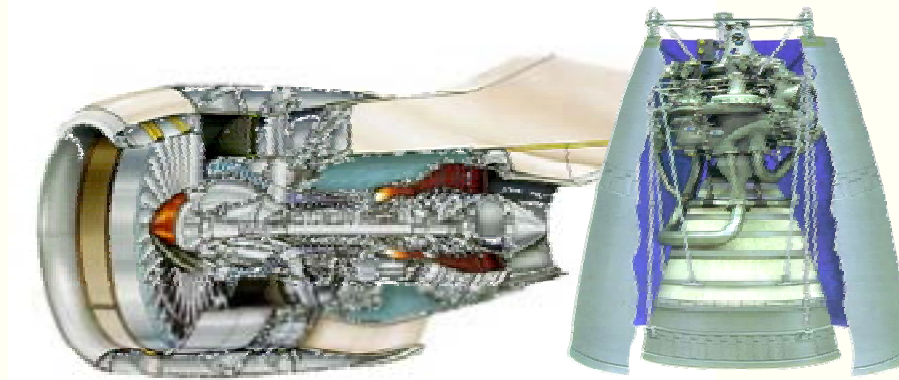
Has lowest possible
Noise Impact

Manufactured in
Green Factories

Material Efficient
(Metal Buy-to-fly,
Propellant Yield)

Contains
Green Materials

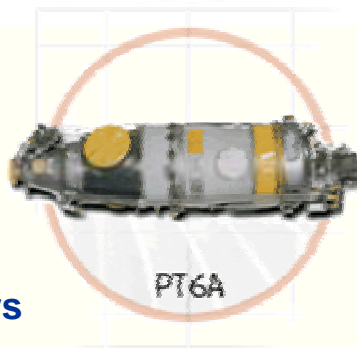
Involves **Green Suppliers**
and Partners



Designed with
Human Factors
in mind

Energy Efficient
during use
(Fuel Burn)

Maintained with
Green Overhaul and
Repair Processes



Designed for
Serviceability, Reusability, Recyclability



Corporate Sponsorship of National Metal Finishing Strategic Goals Program

The Program

It is a voluntary, cooperative effort between Industry, States, POTW's and the EPA to encourage metal finishing industry to move beyond compliance.

Focus is on 7 core environmental goals

- 50% water reduction
- 25% energy reduction
- 50% reduction in land disposal of hazardous sludge's and an overall reduction in sludge generation
- 50% reduction in metals emissions to water and air
- 98% metals utilization
- 90% reduction in organic TRI emissions
- Reduction of human exposure to toxic materials in the facility and the surrounding community



Corporate Sponsorship of National Metal Finishing Strategic Goals Program

Our Role

- Host a minimum four meetings a year for its metal finishing suppliers.
 - Topics of interest (P2, Sharing experiences, cost reduction)
- Provide information and expertise on how the suppliers can make progress towards the objectives of the Strategic Goals Program.
- Help facilitate development of environmental management systems at suppliers.
 - Provide one day EMS training to suppliers
 - Work with suppliers to develop, document and implement an EMS in their facility
 - 1 meeting/month for 9 months



Green Technology Development

- Suppliers play a key role with Pratt & Whitney products

Suppliers who do design and make must understand our hazardous materials concerns

Suppliers must share information

- It's important to work with Key suppliers early in the green technology implementation process .



Green Technology Development

- Pratt & Whitney Materials Engineering has been doing R&D on a new surface treatment intended to replace NiCd plating on steel disks.
 - The new surface treatment is “green”
 - We have partnered with a metal finishing supplier to complete process development, tooling development and scale up for production
- It's important to work with Key suppliers early in the green technology implementation process .
- Green materials and processes are the vision but cost remains a reality



Challenges

- Change (internal and external)
- Thousands of suppliers -- prioritization
- Educating management to recognize the strategic value of having suppliers with good environmental management practices in place.
- Engaging suppliers in a discussion on improving their environmental performance.
- Asking suppliers to spend \$ to see cost reduction.
- Making sure we start to engage suppliers early enough in the process of implementing green technologies

